

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. King on 3/11/09.

27. (Currently Amended) A device comprising:

- an impaction plate,
- a planar collection surface on the impaction plate,
- a spotting nozzle for directing an air stream towards the collection surface, the air stream passing through the spotting nozzle before impacting on the surface to form a spot of airborne particles on the collection surface,

- an analyzer configured to analyze the particles while the particles are retained on the collection surface and the impaction plate remains in the device, the analyzer comprising an optical detector that can analyze the particles as they remain on the collection surface,

- a surface regenerator for regenerating the collection surface such that particles collected before regenerating the collection surface are removed from the collection surface, and thus are substantially no longer present to contaminate a spot of particles collected after regenerating the collection surface, and

- a homing sensor, wherein the homing sensor is a mechanical structure configured to cyclically and automatically move the collection surface relative to the nozzle, the analyzer, and the surface regenerator, movement of the collection surface being controlled such that in each successive cycle a first portion of the collection surface will initially be adjacent to the nozzle, then adjacent to the analyzer, then adjacent to the surface regenerator, and then adjacent to the nozzle once again in a

subsequent cycle, such that the analyzer and the surface regenerator are disposed proximate to the impaction plate during operation of the device.

28. (Original) The device according to claim 27 wherein the collection surface is smooth.

29. (Original) The device according to claim 27 wherein the spot is enriched in particles of 1-10  $\mu\text{m}$  size range.

30. (Original) The device according to claim 27 wherein the analyzer is a fluorescence detector.

31. (Original) The device according to claim 27 wherein the analyzer is an infrared absorbance detector.

32. (Original) The device according to claim 27 wherein the analyzer is a mass spectrometer.

33. (Original) The device according to claim 27 wherein the analyzer is a surface enhanced Raman spectrometer.

34. (Original) The device according to claim 27 wherein the surface regenerator is a felt wheel.

35. (Original) The device according to claim 27 wherein the impaction plate comprises a plurality of collection surfaces.

36. (Original) The device according to claim 27 further comprising at least one particle concentrator upstream of the nozzle.

37. (Original) The device according to claim 27 further comprising a size selective inlet upstream of the nozzle.

38. (Original) The device according to claim 27 wherein the impaction plate is a lobed cam having a shaft, the impaction plate comprises at least one planar collection surface substantially parallel to the shaft, and the homing sensor comprises the shaft.

39. (Currently Amended) A device comprising:  
an impaction plate,  
a planar collection surface on the impaction plate, said planar collection surface being incorporated into the device,

a spotting nozzle for directing an air stream towards the collection surface, whereby impact of the air stream on the surface forms a spot of airborne particles on the collection surface,

means for analyzing the particles while the particles are retained on the collection surface and without removing the collection surface from the device, said means comprising an optical detector that can analyze the particles while they remain on the collection surface,

means for regenerating the collection surface ~~without removing the collection surface from the device~~ such that particles collected before regenerating the collection surface are removed from the collection surface, and thus are substantially no longer present to contaminate a spot of particles collected after regenerating the collection surface, and

means for translocating the collection surface relative to the nozzle, the analyzer, and the surface regenerator, each of said means for analyzing and means for regenerating are disposed proximate the impaction plate during operation of the device.

40. (Previously Presented) The device according to claim 39 wherein the means of analyzing the spot is selected from the group consisting of means for measuring biological, chemical, and radiological properties.

41. (Original) The device according to claim 39 wherein the means of analyzing the spot is a fluorescence detector.

42. (Original) The device according to claim 39 wherein the means for regenerating the collection surface comprises a felt pad.

43. (Canceled)

44. (Original) The device according to claim 39 further comprising at least one particle concentrator upstream of the nozzle.

45. (Original) The device according to claim 39 further comprising a size selective inlet upstream of the nozzle.

46. (Previously Presented) The device according to claim 39 wherein the impaction plate is a lobed cam having a shaft, the impaction plate comprises at least

one planar collection surface substantially parallel to the shaft, and the means of translocating comprises the shaft and a prime mover incorporated into the device.

47. – 56. (Canceled)

57. (Previously Presented) A device comprising:

an impaction plate,

a planar collection surface on the impaction plate,

a nozzle for directing an air stream towards the collection surface,

whereby impact of the air stream on the surface forms a spot of airborne particles on the collection surface,

a pre-analysis spot preparation station,

an analyzer for examining the particles while the particles are retained on the collection surface and the impaction plate and collection surface remain in the device,

a surface regenerator capable of removing the deposit from the surface after analysis such that particles collected before regenerating the collection surface are removed from the collection surface, and thus are substantially no longer present to contaminate a spot of particles collected after regenerating the collection surface, and

a homing sensor, wherein the homing sensor is configured to automatically and operatively position the collection surface relative to the nozzle, the analyzer, and the surface regenerator, the homing sensor comprising a prime mover configured to provide a motive force to operatively position the collection surface relative to the nozzle, the analyzer, and the surface regenerator.

58. (Original) The device according to claim 57 wherein the surface comprises pyramid-shaped structures of about 1-10  $\mu\text{m}$  in height and width.

59. (Original) The device according to claim 57 wherein the surface regenerator comprises a regenerator nozzle for blowing air towards the collection surface.

60. (Original) The device according to claim 57 wherein the impaction plate is a lobed cam having a shaft, the impaction plate comprises at least one planar collection surface substantially parallel to the shaft, and the homing sensor comprises the shaft.

61. (Original) The device according to claim 57 further comprising at least one particle concentrator upstream of the nozzle.

62. (Original) The device according to claim 57 further comprising a size selective inlet upstream of the nozzle.

63. - 65. (Canceled)

66. (Currently Amended) A device comprising:  
an impaction plate,  
a planar collection surface on the impaction plate, said planar collection surface being incorporated into the device,  
a spotting nozzle for directing an air stream towards the collection surface, whereby impact of the air stream on the surface forms a spot of airborne particles on the collection surface,  
means for analyzing the particles while the particles are retained on the collection surface and without removing the collection surface from the device,  
means for regenerating the collection surface ~~without removing the collection surface from the device~~ such that particles collected before regenerating the collection surface are removed from the collection surface, and thus are substantially no longer present to contaminate a spot of particles collected after regenerating the collection surface, and  
means for translocating the collection surface relative to the nozzle, the analyzer, and the surface regenerator, said means for translocating the collection surface comprising a shaft attached to the impaction plate, wherein rotation of the shaft by a prime mover incorporated into the device at predetermined angles operatively positions the collection surface to the spotting nozzle, the means for analyzing the spot, and the means for regenerating the collection surface, each of said means for analyzing and means for regenerating are disposed proximate the impaction plate during operation of the device.

67. (Currently Amended) A device comprising:

an impaction plate, wherein the impaction plate comprises a lobed cam having a shaft, and at least one planar collection surface substantially parallel to the shaft,

a spotting nozzle for directing an air stream towards the collection surface, the air stream passing through the spotting nozzle before impacting on the surface to form a spot of airborne particles on the collection surface,

an analyzer configured to analyze the particles while the particles are retained on the collection surface ~~and the impaction plate remains in the device,~~

a surface regenerator for regenerating the collection surface such that particles collected before regenerating the collection surface are removed from the collection surface, and thus are substantially no longer present to contaminate a spot of particles collected after regenerating the collection surface, and

a homing sensor, wherein the homing sensor is a mechanical structure configured to cyclically and automatically move the collection surface relative to the nozzle, the analyzer, and the surface regenerator, movement of the collection surface being controlled such that in each successive cycle a first portion of the collection surface will initially be adjacent to the nozzle, then adjacent to the analyzer, then adjacent to the surface regenerator, and then adjacent to the nozzle once again in a subsequent cycle, such that said shaft is part of the homing sensor and

such that the analyzer and the surface regenerator are disposed proximate to the impaction plate during operation of the device.

***Allowable Subject Matter***

The following is an examiner's statement of reasons for allowance:

In addition to the remarks of record, claims 27-38 define over the art of record because the art fail to teach or suggest the claimed structure that includes a homing sensor that automatically positions the collection surface relative to the nozzle, the analyzer and the surface regenerator. Additionally, these claims define over the cited prior art because the cited prior art fails to teach the analyzer and the surface

regenerator are disposed proximate to the impaction plate during operation of the device. Rather, the cited prior art regenerates the surface at a location remote from the operation of the impaction plate.

In addition to the remarks of record, claims 39-42 and 44-46 define over the art of record because the art fail to teach or suggest the claimed means for translocating the collection surface relative to the nozzle, the analyzer and the surface regenerator in a structure such that the analyzer and the surface regenerator are disposed proximate to the impaction plate during operation of the device. Rather, the cited prior art regenerates the surface at a location remote from the operation of the impaction plate.

In addition to the remarks of record, claims 57-62 define over the art of record because the art fail to teach or suggest the claimed structure that includes a homing sensor that automatically positions the collection surface relative to the nozzle, the analyzer and the surface regenerator where the homing sensor comprises a prime mover that provides the motive force to position all of the elements.

In addition to the remarks of record, claim 66 defines over the art of record because the art fail to teach or suggest the claimed structure that includes means for translocating the collection surface relative to the nozzle, the analyzer and the surface regenerator where the means for translocating comprise a prime mover that provides the motive force to position all of the elements. Additionally, this claim defines over the cited prior art because the cited prior art fails to teach the analyzer and the surface regenerator are disposed proximate to the impaction plate during operation of the

device. Rather, the cited prior art regenerates the surface at a location remote from the operation of the impaction plate.

In addition to the remarks of record, claim 67 define over the art of record because the art fail to teach or suggest the claimed structure that includes a homing sensor that automatically positions the collection surface relative to the nozzle, the analyzer and the surface regenerator where the homing sensor comprises a prime mover that provides the motive force to position all of the elements. Claim 67 also defines over the art of record by teaching a lobed cam shaft. Finally, claim 67 define over the cited prior art because the cited prior art fails to teach the analyzer and the surface regenerator are disposed proximate to the impaction plate during operation of the device. Rather, the cited prior art regenerates the surface at a location remote from the operation of the impaction plate.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lyle A. Alexander whose telephone number is 571-272-1254. The examiner can normally be reached on Monday, Tuesday and Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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